

***Asterobemisia paveli* (ZAHRADNIK, 1961) (Hemiptera: Aleyrodidae) -
a whitefly new to the fauna of Poland with some new information about
biology of the species**

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ABSTRACT. *Asterobemisia paveli* (ZAHRADNIK, 1961) has been found for the first time in southern Poland. Some information about its morphology, distribution, host plants and life cycle have been given the first time.

KEY WORDS: Hemiptera, Aleyrodidae, *Asterobemisia paveli*, Poland, faunistics, new record, life cycle.

INTRODUCTION

The faunistic studies on *Aleyrodidae* in southern Poland during the years 1997-2003, *Asterobemisia paveli* - a species new to Polish fauna has been collected. The species was recorded from Moravia (type-locality), Germany, Hungary, Romania Spain and Israel. Following three plants were reported as the hosts of this species: *Genista pilosa* (Fabaceae), *Euphorbia* spp. (Euphorbiaceae) and *Daphne gnidium* (Thymelaeaceae) (MARTIN et al., 2000). Morphology of puparia and adults of *A. paveli* follows DOBREANU & MANOLACHE (1969). The development of two ecomorphoses of this species is given by BÄHRMANN (1974).

METHODS

During 1997-2003 the life cycle of *A. paveli* was studied on *Veronica chamaedrys*, mainly in Ojców National Park (near Kraków, south Poland): in Wąwóz Pilny Dół (= Pilny Dół Gorge) (Fig. 1) and in Prądnik Korzkiewski. The leaves infested by the whitefly were stored in glass-tubes for some weeks (or months). The adults, parasites emerged from such material and the puparia were preserved in 50 % alcohol until their identification. The species was determined based on puparia and adults using microscope slides. The measurements of vasiform orifice of 8 females and 4 males, which were reared from puparia have been taken. The figures has been made from slide-mounted specimens only.

The collected dry material and most of the microscopic slides are deposited in the collection of Museum of Ojców National Park in Ojców.

MATERIAL EXAMINATED

6MM (males), 28FF (females), 216 larvae (summer and winter puparia or pupal cases and young instar larvae): **Kraków-Częstochowa Upland: Prądnik Korzkiewski** [UTM: DA15] *Origan -Brachypodietum* (xerothermic grassland):

- 21.VIII.1997 1 vacated of summer puparium (= pupal case) and 2 winter puparia on leaves of *Veronica chamaedrys* L. s. str., leg. A. KLASA;
 - 22.VII.1998: 1 summer pupal case and 1 winter puparium on *V. chamaedrys*; 6 summer puparium, 7 pupal cases and 3 young instar larvae on *Nepeta pannonica* L. – reared material: 23.VII.1998 2FF, leg. A. KLASA;
 - 8.IX.1998 11 winter puparia on *N. pannonica* – reared material: March 1999 1M, 1F; 1 pupal case on *Origanum vulgare* L., leg. A. KLASA;
 - 3.XI.1998 winter puparia: 3 on leaves of *Euphorbia cyparissias* L., 2 on *Sarothamnus scoparius* (L.) W.D.J. KOCH, 24 on *O. vulgare* - reared material: 5.III.1999 2FF, leg. A. KLASA;
 - 4.V.2003 5FF, 1M on leaves of *N. pannonica*, leg. A. KLASA, A. PALACZYK;
 - 23.VI.2003 3 young larvae on leaves of *N. pannonica*, leg. A. KLASA;
- Dolina Kluczwody (= Kluczwody valley) [DA15] 9.VII.2003 21 pupal cases, 11 summer puparia, 3 puparia with parasites inside on *V. chamaedrys* - reared material: 13.VII.2003 1M, 1F, 1 parasite, leg. A. KLASA;
- Wola Kalinowska – on the slope of Pilny Dół Gorge [DA16] *Origano-Brachypodietum Pinnati*: 8.X.1997 5 summer puparia and 13 winter puparia on *V. chamaedrys* - reared material: 25-26.I.1998 1M, 3FF and 3 parasites; 5 winter puparia on *Thymus pulegioides* L., leg. A. KLASA, B. WIŚNIEWSKI;
- 8.I.1998 21 winter puparia on *V. chamaedrys* – reared material: 23-26.I.1999 7FF and 1 parasite, leg. A. KLASA;
 - 11.V.1998 1F, leg. A. KLASA;
 - 17.VI.1998 3 young instar larvae on *V. chamaedrys*, leg. A. KLASA;

- 15.VII.1998 1F, 12 summer pupal cases, 6 summer puparia on *V. chamaedrys* - reared material: 16.VII.1998 1M, 2FF, leg. A. KLASA;
- 29.VII.1998 1 winter pupal case on *V. chamaedrys*, leg. A. KLASA;
- 13.XI.2002 10 winter puparia on *V. chamaedrys* - reared material 6.-10.II.2003 1M, 1F, leg. A. KLASA;

Grodzisko [DA16] 22.VI.1998 4 puparia on *V. chamaedrys*, *Origanum-Brachypodium Pinnati*, leg. A. KLASA;

Nida valley: Prześlin reserve in Chotel Czerwony near Pińczów [DA78] 13.VII.1998 3 pupal cases on *Thymus sp.*, 17 summer puparia and 4 exuviae of pupal cases on *Veronica spicata* L. – reared material: 15 July 1998 2FF and 10 parasites, leg. A. KLASA, A. PALACZYK;

Skorocice reserve [DA78] 13.VII.1998 4 puparia on *V. spicata*, leg. A. KLASA,

- 13.IX.2002 7 winter pupal cases and 1 summer pupal case on *V. spicata* – reared material: 2 parasites, leg. A. KLASA, A. PALACZYK;

The distribution of *A. paveli* in Poland is illustrated in fig. 2.



Fig. 1. Collecting site in Wąwóz Pilny Dół (Ojców National Park).



Fig. 2. *Asterobemisia paveli* (ZAHRADNIK, 1961) – distribution in Poland.

RESULTS AND DISCUSSION

Biology: *A. paveli* was found in xerothermic habitats only - *Origano-Brachypodietum* in Kraków-Częstochowa upland and in *Seslerio-Scorzoneretum purpureae* in Nida valley. Larvae of this species live on the underside of leaves of several plants in southern Poland. The host plant are as follow:

- Scrophulariaceae (148 puparia): *Veronica chamaedrys* (115), *V. spicata* (33);
- Lamiaceae (63 puparia): *Nepeta pannonica* (30), *Origanum vulgare* (25), *Thymus pulegioides* (5), *Thymus* sp. (3);
- Euphorbiaceae (3 puparia) - *Euphorbia cyparissias*;
- Fabaceae (2 puparia) - *Sarothamnus scoparius*.

Puparia always occurred on underside of leaves, often one by one, but on *Veronica chamaedrys* and on *Origanum vulgare* up to 3 puparia on a single leaf. The leaf of *Veronica chamaedrys* with typical position of puparia of *A. paveli* is illustrated in fig. 3. The leaves of *Nepeta pannonica* and *Veronica spicata* infested by the whitefly usually had a spot of redish colour near puparia. *Asterobemisia paveli* has two generations per year in Poland.

Adults are on wing from May (first observation - 4.V.). Young larvae of first generation were observed from the end of June (from 22.VI.). Adults of the second generation are on wing in the middle of July. On the 22nd of July young larvae were observed, probably the second generation, and on the 29th the same month – winter puparia for the first time have been observed. After 21st August only winter puparia were collected (9.IX., 8.X., 13.XI., 8.I). Both, summer and winter puparia occurred on lower leaves only, where the moisture was higher than on upper positions of the plant. Sometimes winter puparia were found together with slough of summer puparia on the same leaves (on *Nepeta pannonica*). *A. paveli* was considered as a one-generation's species in central Europe, but BÄHRMANN (1974) did not exclude the larger quantity of generations in nature.

In general the summer puparia did not differ morphologically from winter puparia (Fig. 4). They had yellow or brown colour and they were covered up by white wax (Fig. 5).

The shape of vasiform orifice of adults reared from puparia was compared by us, with the shape of specimens presented by DOBRANU & MANOLACHE (1969). The vasiform orifice of females did not show the typical morphological differences - ligula was about 1,5 times longer than width of the operculum. The differences in structure differences of vasiform orifice of males which come from Romania and from Poland were observed. According to DOBRANU & MANOLACHE (1969) the ligula of vasiform orifice of male is about 1,5 times shorter than width of operculum. The length of ligula in male specimens from Poland is equal or somewhat longer than the width of operculum (Fig. 6a, b). It is difficult to explain these differences.

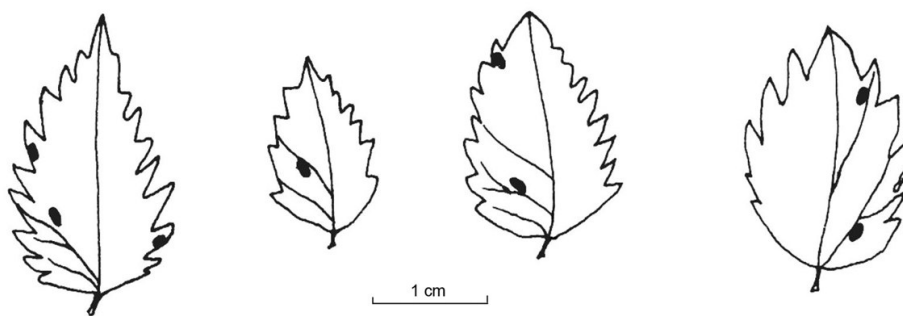


Fig. 3. Leaves of *Veronica chamaedrys* with typical position of puparia of *A. paveli* (Wąwóz Pilny Dół).

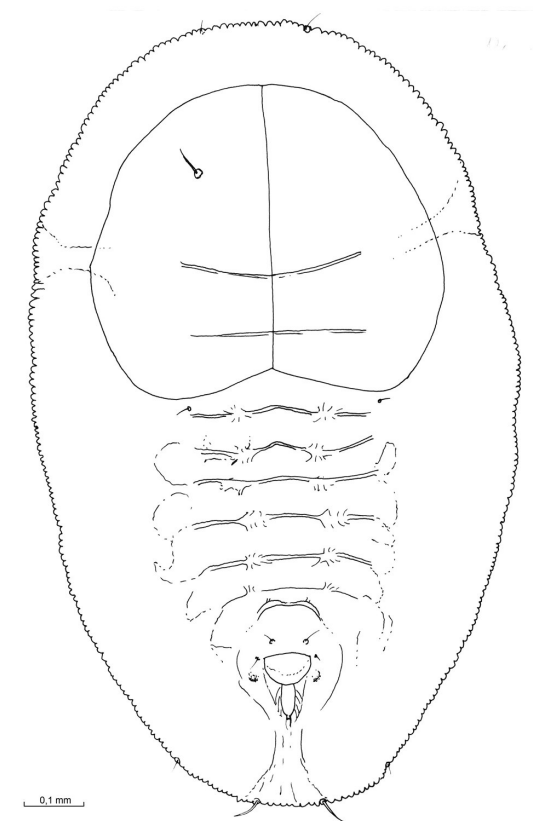


Fig. 4. *Asterobemisia paveli* – dorsal view of summer puparium (ex *Veronica chamaedrys*, Grodzisko).

tion, with adults flying in May (overwintering generation) and July (spring-summer generation); it overwinters as a puparium. *A. paveli* is polyphagous, puparia were recorded on 7 host plants from 4 families (*Veronica chamaedrys*, *V. spicata*, *Nepeta pannonica*, *Origanum vulgare*, *Thymus pulegioides*, *Euphorbia cyparissias* and *Sarothamnus scoparius*) in Poland. The differences in structure of vasiform orifice of males which come from Romania and from Poland were observed. The localities of *A. paveli* in southern Poland are situated on northern border of range of this species in Europe. There are 17 species of whiteflies recorded from Poland so far, including *Asterobemisia paveli*.

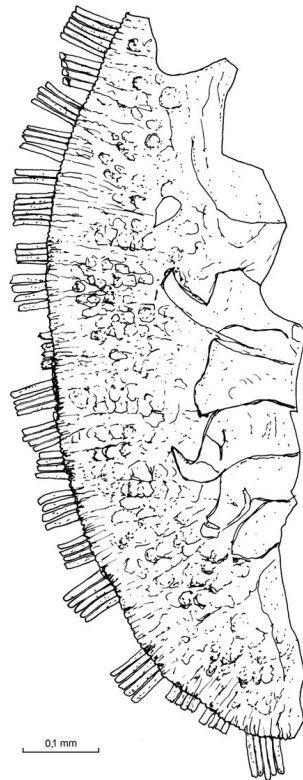


Fig. 5. *Asterobemisia paveli* – the fragment of wax cover (ex *Nepeta pannonica*, Prądnik Korzkiewski).

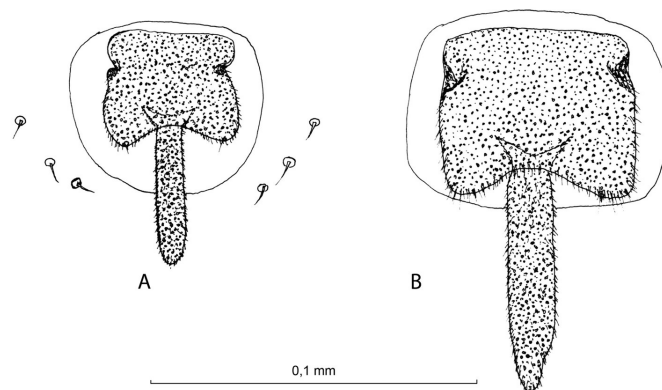


Fig. 6. *Asterobemisia paveli* – orificium vasiforme of adults: a) male (from puparium on *Veronica chamaedrys*, Wąwóz Pilny Dół), b) female (from puparium on *Veronica chamaedrys*, Wąwóz Pilny Dół).

REFERENCES

- BÄHRMANN R. 1974. Zur entwicklung der Ökomorphosen von *Neobemisia paveli* ZAHRADNIK (Homoptera, Aleyrodina). Zool Anz., Jena 193 (5/6): 336-349.
- DOBREANU E., MANOLACHE C. 1969. Homoptera Aleyrodoidea, Subfamilia Aleyrodinae. Fauna Republicii Socialiste România. Insecta **8**: 1-152.
- MARTIN J.H., MIFSUD D., RAPISARDA C. 2000. The Whiteflies (Hemiptera: Aleyrodidae) of Europe and Mediterranean Basin. Bulletin of Entomological Research **90**: 407-448.

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